

II. AMENDMENTS TO THE CLAIMS:

Listing of Claims:

1-44. (Cancelled)

45. (Currently amended): A multi-channel system for classifying particles sperm cells according to one or more characteristics of the particles sperm cells, said system comprising: a plurality of flow cytometry units each of which is operable to classify particles in provide sex sorted sperm from a mixture of particles sperm cells by interrogating a stream of fluid containing said particles sperm cells using a beam of pulsed electromagnetic radiation, at least one sensor operable to generate a time-varying output signal indicative of at least one characteristic of the sperm cells;

said units sharing an integrated platform comprising a common source of said pulsed electromagnetic radiation and a common processor for receiving and processing information from the units at least one output signal from the at least one sensor as a substantially continuous stream and to process the output signals in real time to send control signals to the flow cytometry units during a sorting process to adjust a sort operation as a function of said information received by the common processor.

46. (Cancelled)

47. (Currently amended): The system of claim 45 wherein said particles are cells common source of said pulsed electromagnetic radiation comprises a plurality of laser pulses, each pulse having a peak power that is greater than the average power output of a laser and a wavelength in a range of about 350-370 nm.

48. (Currently amended): The system of ~~claim 45~~ claim 47 wherein said ~~particles are sperm cells~~ laser emits pulses having a width of about 1-100 picoseconds at a pulse frequency of about 50-150 MHz at a power of about 50-500 milliwatts.

49. (Currently amended): The system of ~~claim 45~~ claim 48 wherein said ~~integrated platform further comprises a common input for controlling operation of the units~~ sex sorted sperm has an enriched subpopulation having a coefficient of variation selected from a group consisting of: between about 2.0% and about 1.0%, between about 1.5% and about 1.0%, about 1.4%, and about 1.3%.

50. (Cancelled)

51. (Previously presented): The system of claim 45 wherein said common source of said pulsed electromagnetic radiation comprises a single pulsed laser beam.

52. (Previously presented): The system of claim 51 further comprising a beam splitting system for splitting the single pulsed laser beam into multiple beams and directing the multiple beams into optics systems of respective flow cytometry units.

53. (Previously presented): The system of claim 45 wherein said integrated platform further comprises a common housing, said flow cytometry units comprising interchangeable modules removably mounted in the housing.

54. (Original): The system of claim 45 wherein each flow cytometry unit comprises an epi-illumination optics system for interrogating a respective fluid stream.

55. (Previously presented): The system of claim 45 wherein said processor is operable to output an indication of the fluorescence intensity measured by each unit.

56. (Previously presented): The system of claim 45 wherein said processor is operable to output an indication of the rate at which each unit is separating particles.
57. (Previously presented): The system of claim 45 wherein said processor is operable to output an indication of particle staining variations.
58. (Previously presented): The system of claim 45 wherein said processor is operable to output an indication of a decision boundary used by each unit for discriminating between particles.
59. (Original): The system of claim 45 wherein said flow cytometry units are adapted to operate in parallel.
60. (Currently Amended): The system of claim 45 wherein said plurality of flow cytometry units are operable to sort the particles integrated platform further comprises a common input for controlling operation of the units.
61. (Previously presented): The system of claim 60 wherein said plurality of flow cytometry units comprises a jet-in-air droplet sorting flow cytometry unit.
62. (Previously presented): The system of claim 45 wherein the common processor receives and processes said information to permit evaluation of the operation of one unit relative to another unit.
63. (Previously presented): The system of claim 45 wherein the processor is operable to process the output signals in real time.
64. (Previously presented): The system of claim 45 wherein said common processor is operable to send control signals to the flow cytometry units during a sorting process to adjust their operation as a function of said information received by the common processor, and wherein the flow cytometry units are responsive to the control signals.

65-80. (Cancelled)

81. (Previously presented): The system of claim 45 wherein said integrated platform further comprises at least one of: (1) a common supply of particles; (2) a common housing; (3) a common input for controlling operation of the units; and (4) a common fluid delivery system for delivering fluid containing said particles to said flow cytometry units.